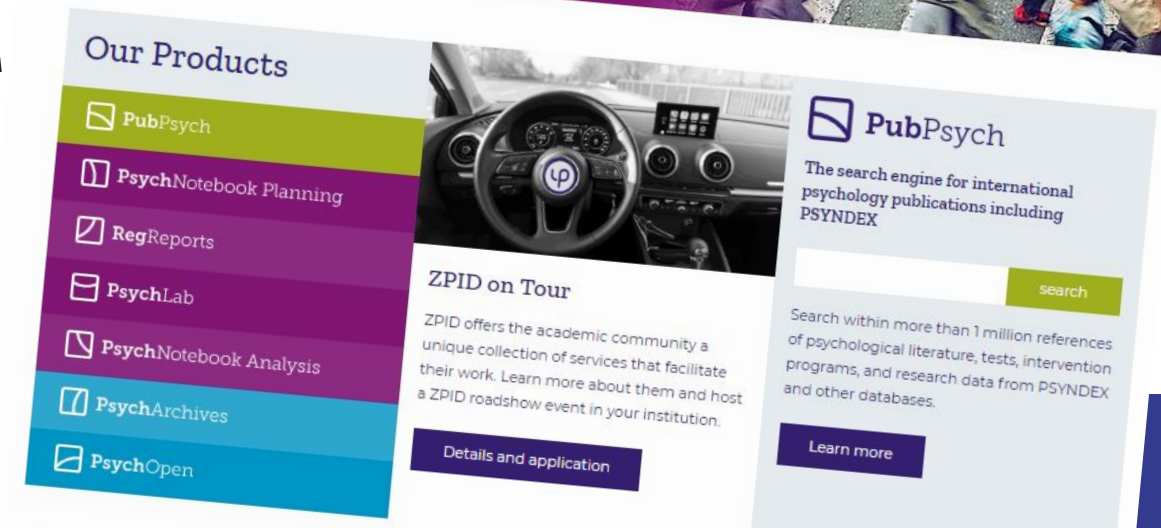


# Open Science in Tourism Research: Tools and Services



Prof. Dr. Michael Bosnjak

<http://bit.ly/CBTS2019-ZPID>

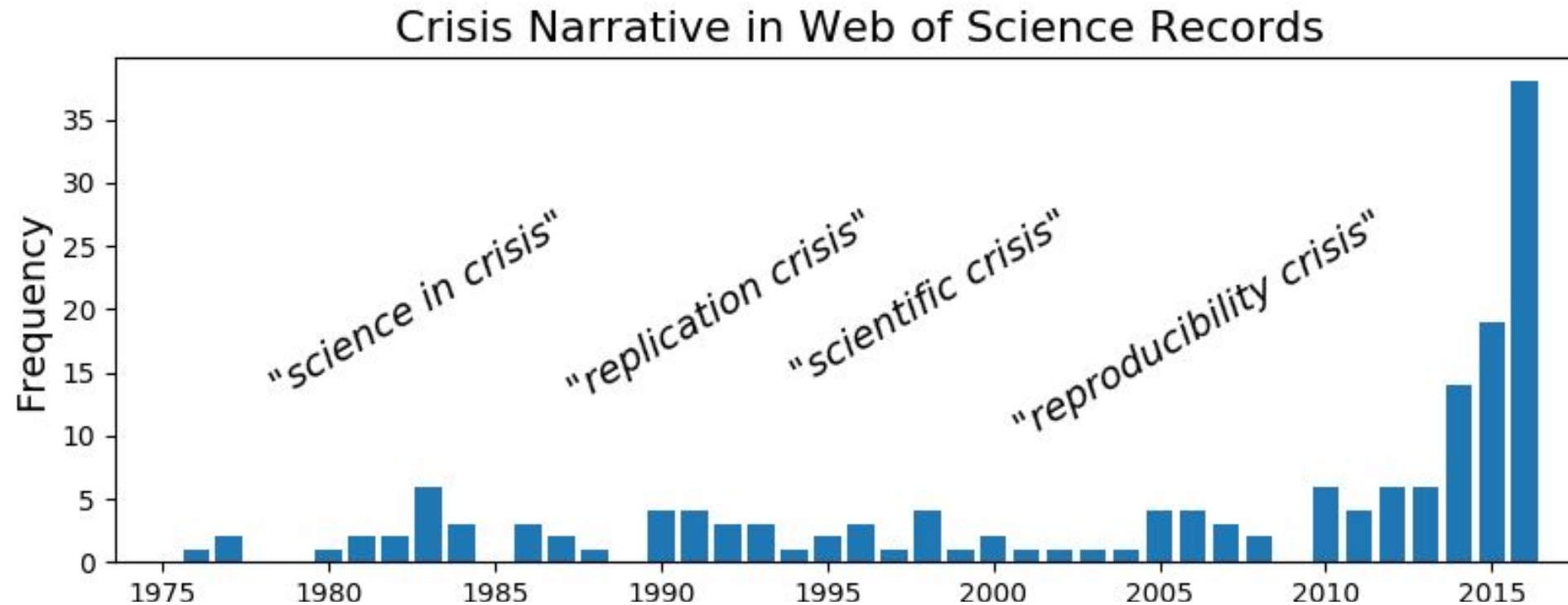


# Tourism Research: Reference Disciplines

Broad umbrella of reference disciplines tourism research is making use of, e.g.:

- Marketing
- Management
- Economics
- Sociology
- Political Science
- Geography
- Life Sciences
- **Psychology, especially for Consumer Behavior issues**

# Reference Disciplines: Replication Crisis



Number of titles, abstracts, or keywords that contain one of the following phrases: “reproducibility crisis,” “scientific crisis,” “science in crisis,” “crisis in science,” “replication crisis,” “replicability crisis”, found in the Web of Science records. Modified from ([Fanelli, 2018](#)).

# Replication Crisis: Solutions: Open Science I

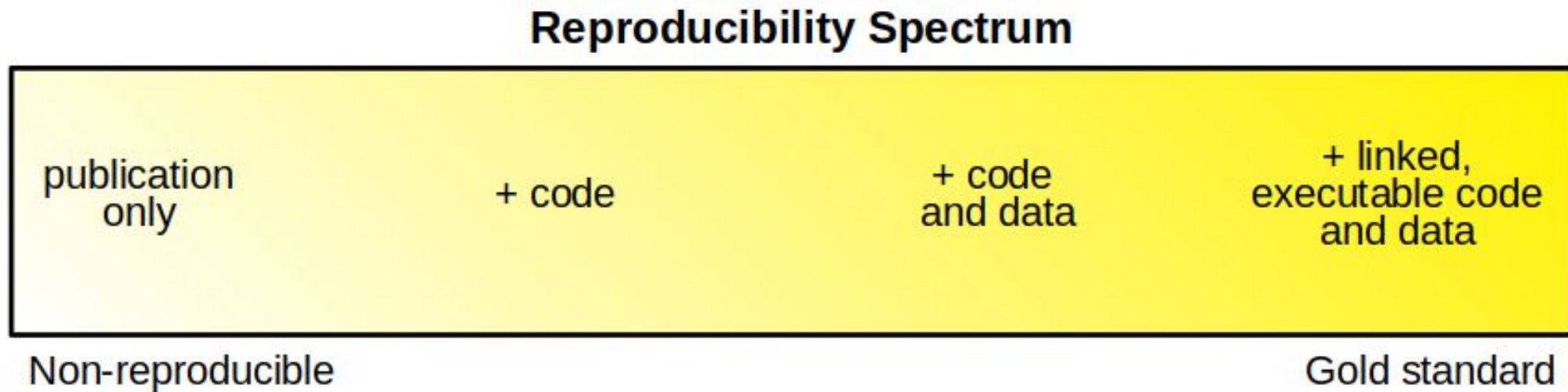
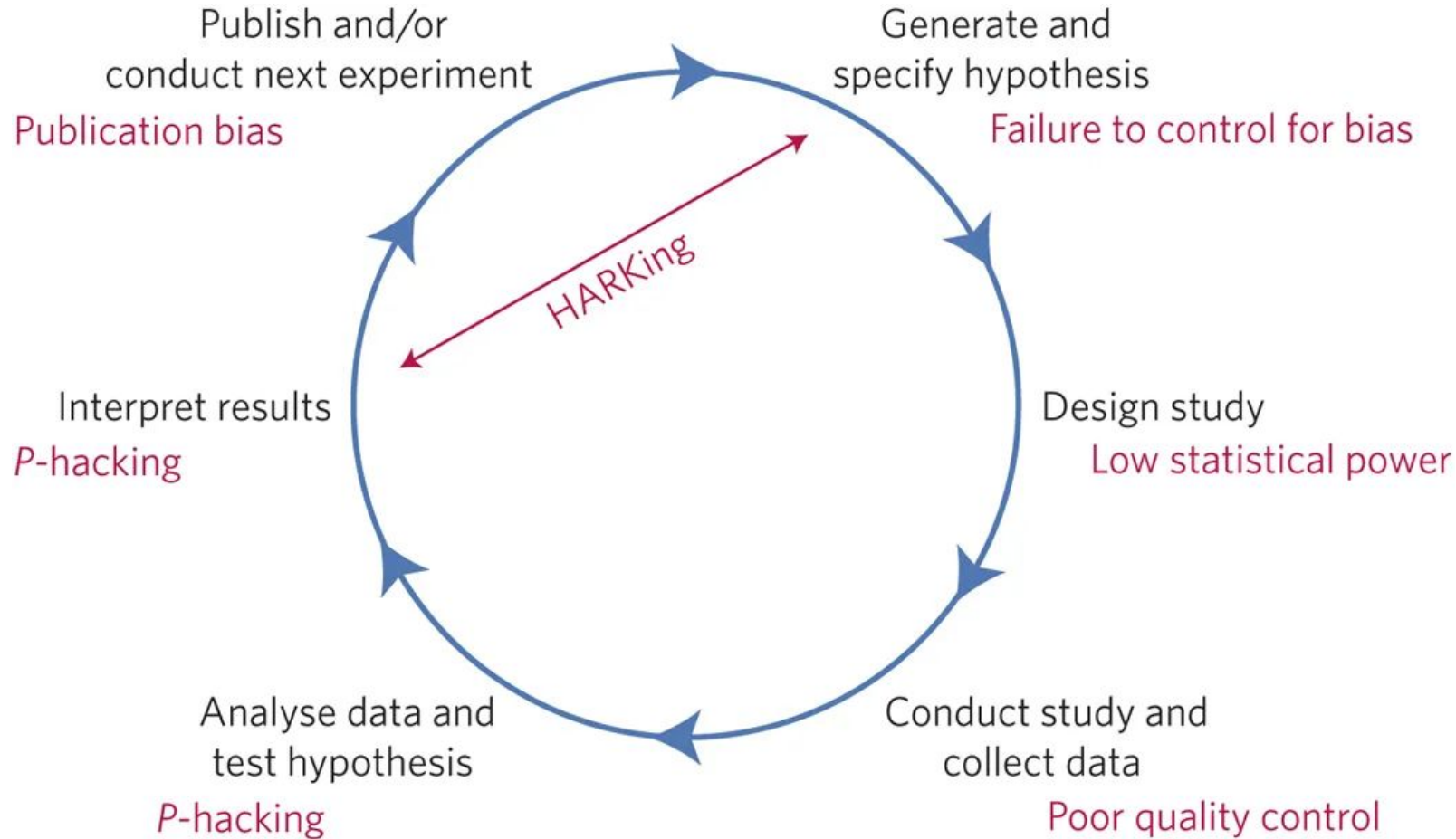


Illustration of the “spectrum of reproducibility”, ranging from not reproducible to the gold standard that includes code, data and executable files that can directly replicate the reported results. Modified from ([Peng, 2011](#)).



# Replication Crisis: Solutions: Open Science II



[Munafo et al. \(2017\): “A manifesto for reproducible science”](#), summarizes the **vulnerability of empirical research** in different stages of an idealized **research cycle**.

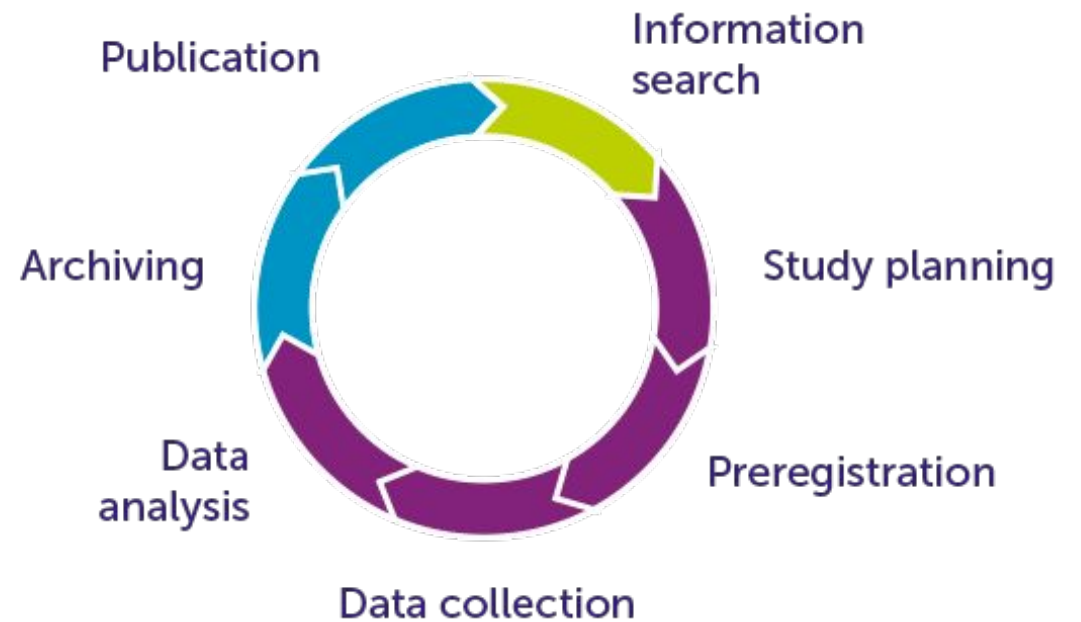
**Video with Chris Chambers** on Registered Reports as on solution to address the threats to empirical science:  
<https://youtu.be/d2nVPhVacFk>

**Example** of two interrelated **preregistered studies in tourism research** (under review in JTR):

<http://dx.doi.org/10.23668/psycharchives.2636>

# leibniz-psychology.org (ZPID)

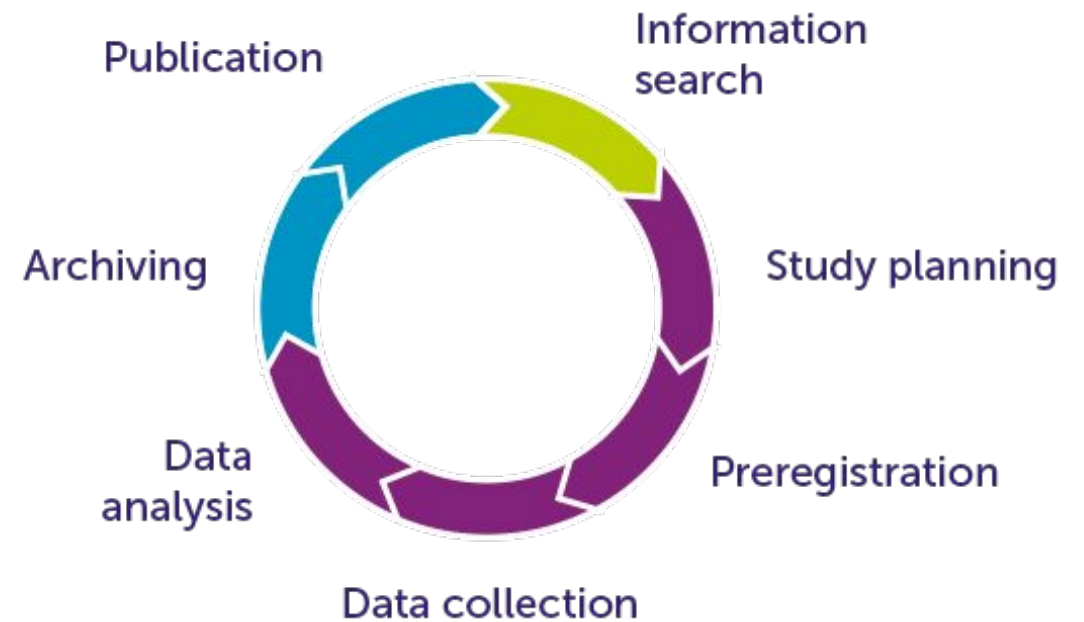
- ... is a Public Open Science Institute for Psychology and related disciplines, such as Tourism Research.
- ... is in the process of strategic expansion towards a one-stop research support organization (i.e., research infrastructure), providing services for the entire research cycle

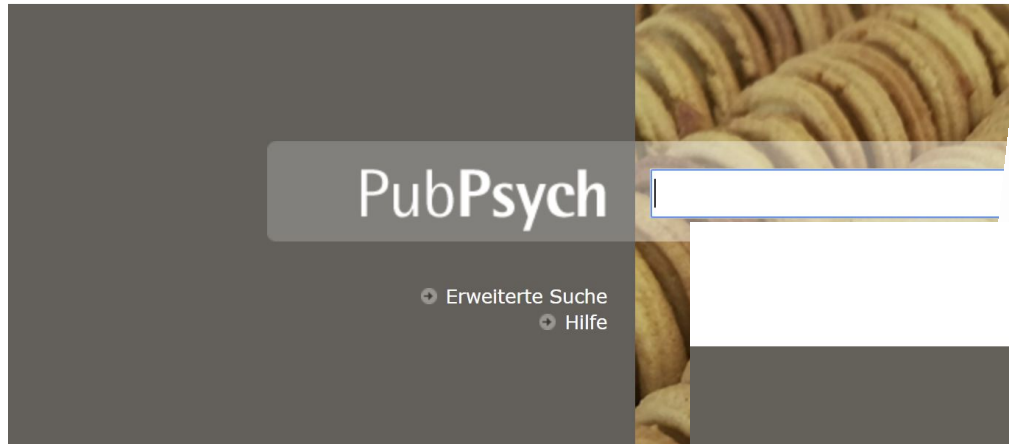


# leibniz-psychology.org (ZPID)

Supporting the (scientific) community in psychology (and beyond) to make research

- accessible
- transparent
- reproducible,
- and replicable.





<https://www.pubpsych.eu/>



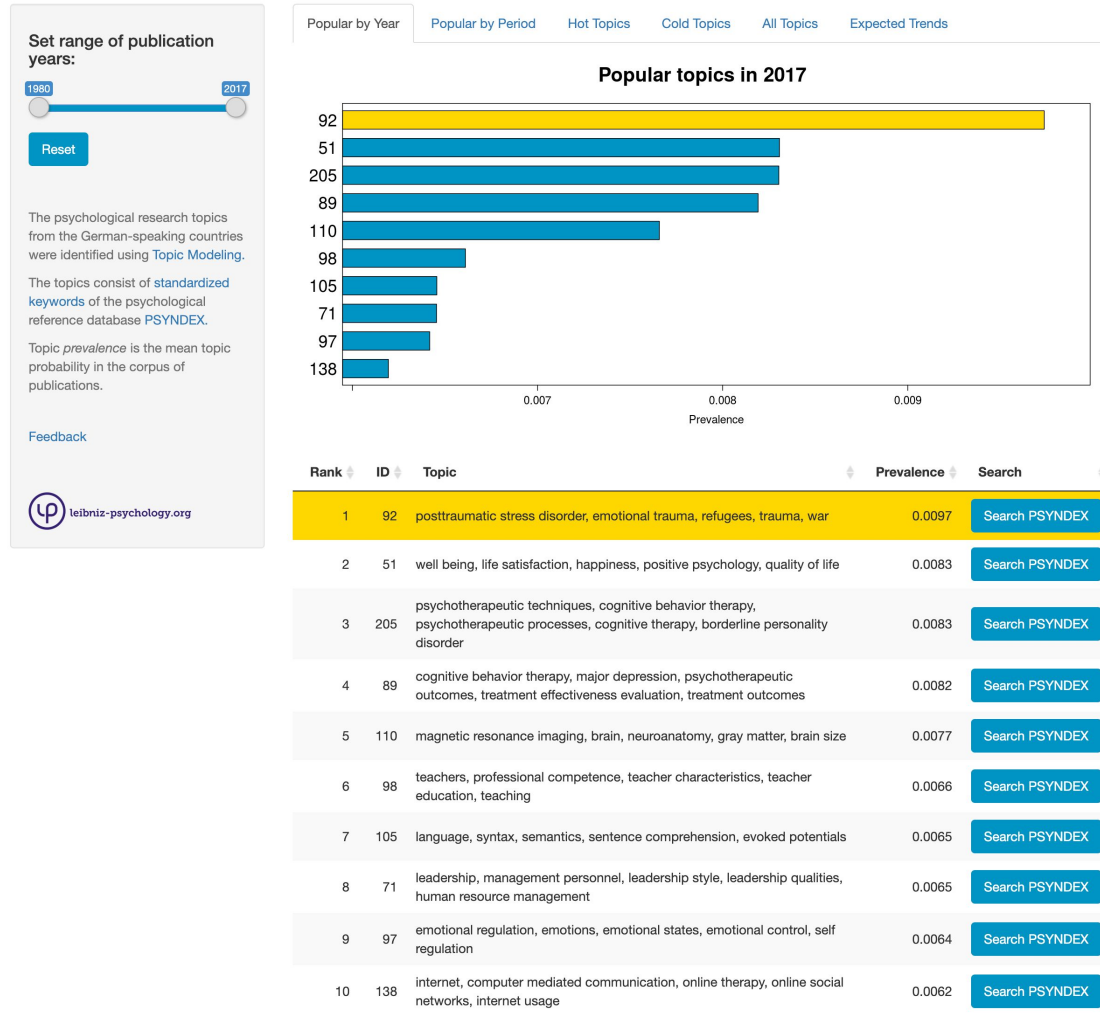


# PubPsych: Usage Scenarios

- Identifying pertinent sources from Psychology / Consumer Behavior Research in Europe, namely publications, data, study material, and more for research purposes.
- Easy access to Open Access Publications (using the unpaywall functionality).
- Using PubPsych as a low-hurdle educational tool for courses in tourism.
- Using PsychPorta (under development) to explore the entire semantic space of a Psychology-related topic.

## Information search

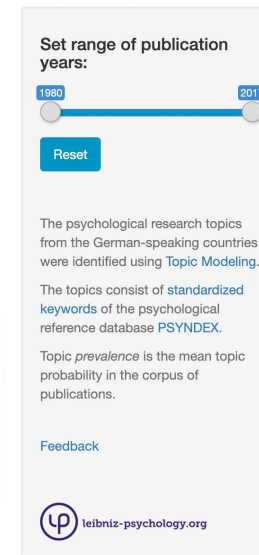
### PsychTopics



### PsychTopics

### PsychTopics

### PsychTopics



Compare the observed with the expected course at a desired point in time.

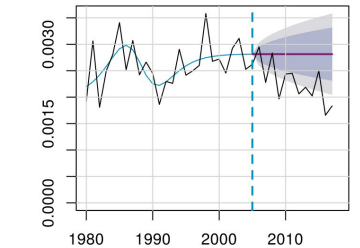
#### Search for topics

Please enter search term

A list of possible search terms can be found [here](#)

ID	Topic
1	computer assisted instruction, teaching methods, learning, instructional media, learning environment
2	cognitive processes, learning, instructional media, reading comprehension, pictorial stimuli
3	dementia, cognitive impairment, alzheimer's disease, cognitive ability, aging
4	attachment behavior, attachment theory, parent child relations, early experience, attachment disorders
5	life experiences, narratives, biographical data, biography, life review
6	infertility, human females, reproductive technology,

#### Observed and expected trend of Topic



#### Select year:



<https://abitter.shinyapps.io/psychtopics/>

# PsychTopics: Usage Scenarios

- Finding ideas for emerging or (to-be) revitalized topics.
- Historically contextualizing your own research.
- Instructional material for students to historically contextualize study projects and dissertations.



leibniz-psychology.org

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Testinstrumente sortiert

nach Sachgebieten ▼

alphabetisch ▼

chronologisch ▼

testrelevante Suchbegriffe eingeben

**Ansprechpartnerin**

Gülay Karadere (Dipl.-Psych.)

Wissenschaftl. Mitarbeiterin

+49 (0) 651 201-4934

guek(at)leibniz-psychology.org

**Veröffentlichen auch Sie Ihr Testverfahren im Testarchiv!**

Zum Ausbau des Testarchivs, mit dem das ZPID psychologische Verfahren bereitstellt und (kosten)frei zugänglich macht, suchen wir weitere Wissenschaftler, die ihr Verfahren NutzerInnen im Rahmen von Open Access zur Verfügung stellen wollen.

Diese **Vorteile** bieten wir Ihnen:

- Ihr Verfahren wird in einem der größten Testarchive aus dem deutschen Sprachraum veröffentlicht.
- Ihr Verfahren bleibt dauerhaft online verfügbar.
- Die Vervielfältigung, Verbreitung und Veröffentlichung des Verfahrens ist durch die Creative Commons Lizenz geregelt.
- Sie erhalten von den Testnutzer/-innen, die ihr Verfahren eingesetzt haben. Rückmeldung über Forschungsergebnisse.

**Wie veröffentliche ich ein Testverfahren?**

**Einverständniserklärung**  
Wir benötigen Ihre Zustimmung und die Ihrer Koautor/-innen, die auch die Rechte an diesem Verfahren besitzen.

[Einverständniserklärung \(PDF\)](#)

**Testverfahren**  
Wir benötigen Ihr Testverfahren und eventuell



WORK IN PROGRESS



# Testarchive: Usage Scenarios

- Identifying and using validated open access questionnaire items for your own research.
- Item source for teaching projects in the area of consumer behavior in tourism.
- First set of tests to be published will include, among other concepts, personality, self-concept, well-being / QoL, cultural orientation, interpersonal communication, physical activity, driving styles, and more.

# PsychNotebook

jupyter sai(2) Last Checkpoint: a minute ago (autosaved)

 Logout

File Edit View Insert Cell Kernel Widgets Help

Truste

 Markdown Select Psychological method  

## How smart do you think you are?

### A meta-analysis on the validity of self-estimates of cognitive ability

Philipp Alexander Freund and Nadine Kasten

## Hypotheses

**Overall Relationship:** Most studies investigating the relationship between self-estimates of cognitive ability and psychometric test significant, positive correlations. We therefore expect to find a significant, positive overall relationship between the two variables

**Moderator Analysis:** We hypothesize that self-estimates concerning verbal, numerical, or spatial abilities should be more valid than assessments of general cognitive ability, which in turn is usually a compound of different subabilities (as implemented in omnibus batteries). Consequently, use of these "standard" abilities should also result in more valid self-estimates than use of more rarely a abilities, such as memory or processing speed, for instance.

In [9]:

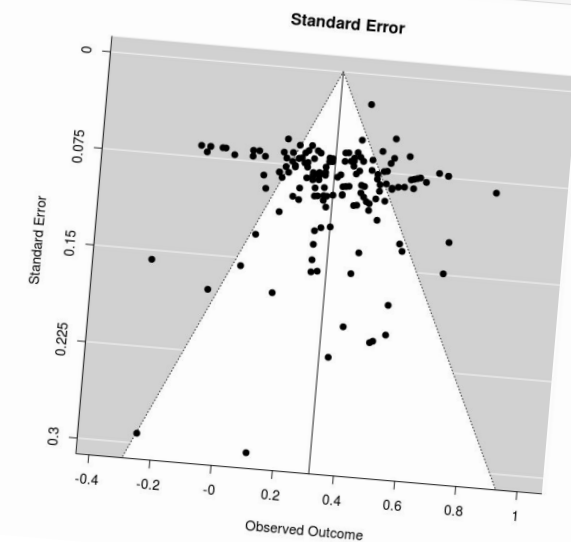
```
1 ##install packages
2 #install.packages("ggplot2")
3 #install.packages("metafor")
4
5 ##load packages
6 library(ggplot2)
7 library(metafor)
8
9 ##load data
10 sai <- read.csv(file="SAI_Beispiels.csv",header=TRUE, sep=";", dec = ",")
```

## Publication Bias

We also performed a funnel plot analysis to investigate if there was any kind of publication bias toward over- or underpowered studies in our data set. As the figure shows, the majority of the effect sizes have rather low standard errors (smaller than 0.1), meaning that they were estimated with a reasonable degree of precision. Also, there appears to be a moderately asymmetric relationship between the magnitude of effect sizes and their standard errors, there is practically no reason to assume that publication bias is a problem in the present meta-analysis. The funnel plot also gives evidence for heterogeneity among effect sizes.

In [10]: 

```
1 funnel(unconditional, main="Standard Error")
```



# PsychNotebook: Usage Scenarios

- Collaborative planning, analyzing, and documenting research projects.
- Collaborative teaching projects.
- One-click archiving functionality for long-term preservation.

## Preregistration



Registered Reports Workshop 2018

Copy of Information Recommended for Inclusion in Manuscripts Reporting Meta-Analyses

Description Guidelines & Warnings Materials **Steps** +SHARE VIEW All changes saved

**Title**

1 State the research question and type of research synthesis (e.g., narrative synthesis, meta-analysis).

**Author note**

2 List all sources of monetary and in-kind funding support; state the role of funders in conducting the synthesis and deciding to publish the results, if any.

Describe possible conflicts of interest, including financial and other nonfinancial interests.

Give the place where the synthesis is registered and its registry number, if registered.

Provide name, affiliation, and e-mail address of corresponding author.

**Abstract**

3 **Objectives:**

State the research problems, questions, or hypotheses under investigation.

**Abstract**

4 **Eligibility criteria:**

Describe the characteristics for inclusion of studies, including independent variables (treatments, interventions), dependent variables (outcomes, criteria), and eligible study designs.

**Abstract**

5 **Methods of synthesis:**

Describe the methods for synthesizing study results, including

- Statistical and other methods used to summarize and to compare studies
- Specific methods used to integrate studies if a meta-analysis was conducted (e.g., effect-size metric, averaging method, the model used in homogeneity analysis)

**Abstract**

6 **Results:**

State the results of the synthesis, including

- Number of included studies and participants, and their important characteristics
- Results for the primary outcome(s) and moderator analyses
- Effect size(s) and confidence interval(s) associated with each analysis if a meta-analysis was conducted





# RegReports: Usage Scenarios

- Framework to develop (pre-registered) study protocols, based on agreed-upon templates endorsed by professional associations (currently: APA, BPS, DGPs). APA style guide-compliant.
- Notarized proof of authorship in the earliest possible stage of idea development.
- Educational tool to train students in study planning.
- Entry ticket for free data collection in PsychLab (see next).

## Data collection

 PsychLab



# PsychLab: Usage Scenarios

- Low-hurdle data collection:
  - Current model:  
Proposal > Proposal Decision > Own Data Collection > Paper preparation
  - Our model:  
Protocol > Protocol Decision > **Independent** Data Collection for free >  
Protocol finalization = Paper
- Large-scale panel and top-notch technology for eye tracking
- Free of charge, only quality is decisive for acceptance/refusal
- Long-term preservation of DROs (see next)



## Disciplinary Repository for Psychological Science

**PsychArchives** is a disciplinary repository preserving a variety of digital research objects (DROs), with 21 different publication types (preprints, primary, and secondary publications), research data, tests, preregistrations, multimedia and code. We provide easy and free access to DROs according to the FAIR principles, which implies the commitment to ensure that research and research data are findable, accessible, interoperable, and reusable.

Start a new search

Search

### Recent Submissions

What about false insights? Deconstructing the Aha! experience along its multiple dimensions for correct and incorrect solutions separately. (Danek et al.)

2017 researchData

Twin study of the self- and peer- assessments of generalized prejudice: genetic and environmental overlap between prejudice, personality, and ideological variables (Bratko et al.)

2019-01 studyProtocol

Study\_1\_first\_sample\_German\_Turks (Knežević et al.)

2019-02-08 researchData

Materialien zu "Nonverbale Synchronie und Musik-Erleben im klassischen Konzert" (Seibert et al.)

2019 supplement

Estimating the Performance of Predictive Models with Resampling Methods (Pargent)

2019 conferenceObject

Supplementary materials to "Contempt of congress: Do liberals and conservatives harbor equivalent negative emotional biases towards ideologically congruent vs. incongruent politicians at the level of individual emotions?" (Steiger et al.)

2019 supplement

<https://www.psycharchives.org/>

DataWiz

### PsychArchives in a nutshell

#### Shared Digital Research Object (DRO)

- research outputs from the entire psychological research are welcome

#### Citable and discoverable

- uploads are assigned a Digital Identifier (DOI) to make them uniquely citable.

#### Open licensing

- fostering re-use and open access

#### Safe

- your research output is safe for the future at a sustainable infrastructure.

**DataWiz is a free data management system that helps prepare research data.**

- facilitates high-quality documentation according to current standards.
- enables collaborative and distributed work on projects.
- ensures the long-term reusability of research data.

**DataWiz covers the entire research data management process:**

- Organize and document research projects
- Create data management plans adapted to the requirements of various sponsors (BMBF, DFG)

**Archiving and reuse**

- Export study documentation for preregistrations
- Work together with specific assignment of access rights
- Import and version control records
- Read variable descriptions from SPSS and convert into codebooks
- Convert to relevant data formats
- Export entire project or individual studies into long-term readable formats for your own re
- Provide via PsychArchives, the ZPID repository

**Getting started with DataWiz:**

You need a DataWiz account that you can create [here](#). After logging in with your DataWiz user



# PsychArchives / DataWiz: Usage Scenarios

- Generating a data management plan using DataWiz for a prospective study (as requested by an increased number of funding institutions).
- Reproducible documentation of already collected data using DataWiz.
- Free long-term preservation of own DROs, e.g. supplements of publications, theses, presentations/course material, video material, and more. DOI-identifiable, GDPR-compliant, fine-grained access levels.
- Growing DRO-source for research and teaching.

## Social Psychological Bulletin

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# CLINICAL PSYCHOLOGY IN EUROPE

The Official Academic Journal of the  
European Association of Clinical Psychology and Psychological Treatment



Twee



Forum Paper

Social Psychological Bulletin 13(2): e25025  
<https://doi.org/10.5964/spb.v13i2.25025> (29 May 2018)

## Is Psychology Still a Science of Behaviour?

▼ Dariusz Dolirski

### Abstract ▲

Since the 1970s, social psychology has examined real human behaviour to an increasingly smaller degree. This article is an analysis of the reasons why this is so. The author points out that the otherwise valuable phenomenon of cognitive shift, which occurred in social psychology precisely in the 1970s, naturally boosted the interest of psychologists in such phenomena like stereotypes, attitudes, and values; at the same time, it we have also witnessed a growing conviction among psychologists that explaining why people display certain reactions holds greater importance than demonstrating the conditions under which people display these reactions. This assumption has been accompanied by the spread of statistical analysis applied to empirical data, which has led to researchers today generally preferring to employ survey studies (even if they are a component of experiments being conducted) to the analysis of behavioural variables. The author analyses the contents of the most recent volume of "Journal of Personality and Social Psychology", and argues that it is essentially devoid of presentations of empirical studies in which human behaviours are examined. This gives rise to the question of whether social psychology remains a science of behaviour, and whether such a condition of the discipline is desirable.

### Keywords ▲

social psychology, behavioural research, dichotomic variable, uncertainty principle

The eruption of the scandal involving academic fraud committed by Diederik Stapel led to the emergence of a large number of exceptionally important initiatives among social psychologists that addressed the crisis that had engulfed our discipline. Attention was drawn to the need to replicate studies, to place greater emphasis on effect size than on the significance of differences between averages, and the idea of pre-registration of studies was floated. And while we may not yet claim that social psychology is clearly and fact of the developing debate on the subject and growing awareness of the issues involved is of fundamental importance.

The objective of this article, however, is to focus attention on an entirely different issue, itself also associated with social psychology. Before the beginning of the scandal, it was the issue of the replicability of research that was the focus of attention. Before the beginning of the scandal, it was the issue of the replicability of research that was the focus of attention.

<https://www.psychopen.eu/>

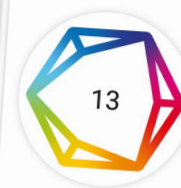
Contents Article info Citation Metrics Comment Related  
Tabs Refs Cited

Altmetric



Picked up by 1 news outlets  
Blogged by 2  
Tweeted by 28  
49 readers on Mendeley

Dimensions



13 Total citations  
13 Recent citations  
n/a Field Citation Ratio  
n/a Relative Citation Ratio

Article views

Unique views: 3625 | Total views: 5361

HTML PDF XML

# PsychOpen: Usage Scenarios

- *For readers:* Free articles in rising star journals, extended functionalities (impact, related literature, archive integration, notebook integration, etc.)
- *For researchers:* Open access publication opportunity in highly visible/accessible journals, no APCs
- *For professional associations:* Free journal publishing opportunity, high-quality publishing services offered by ZPID

## Statistical Power

## What-If Analysis

## Dataset

Domain

Survey methodology

Meta Analysis

Interviewer Effects

## Moderators

☐ Country of conduct☐ Funds for conduct☐ Incentives

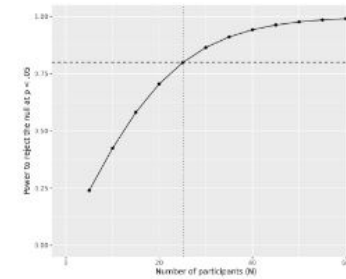
## Statistical Power

Statistical power is defined as the probability to reject a false null hypothesis. That means, if there really is an effect, power is the probability to detect it.

Statistical power depends on the size of the effect and the sample size. A bigger effect is easier to detect and a larger sample also increases power.

To calculate power here, we take the existing meta-analytic evidence to assume the mean effect size as proxy for the size of the effect.

The plot shows the power curve depending on the size of the sample. Thus, we can conclude, how many participants are needed to achieve a certain level of statistical power.

Power plot of  $n$  necessary to achieve  $p < .05$ 

Depending on meta-analytic evidence, an effect size of **0.56** is supposed. To achieve 80 % statistical power, a sample size of **25** is needed.



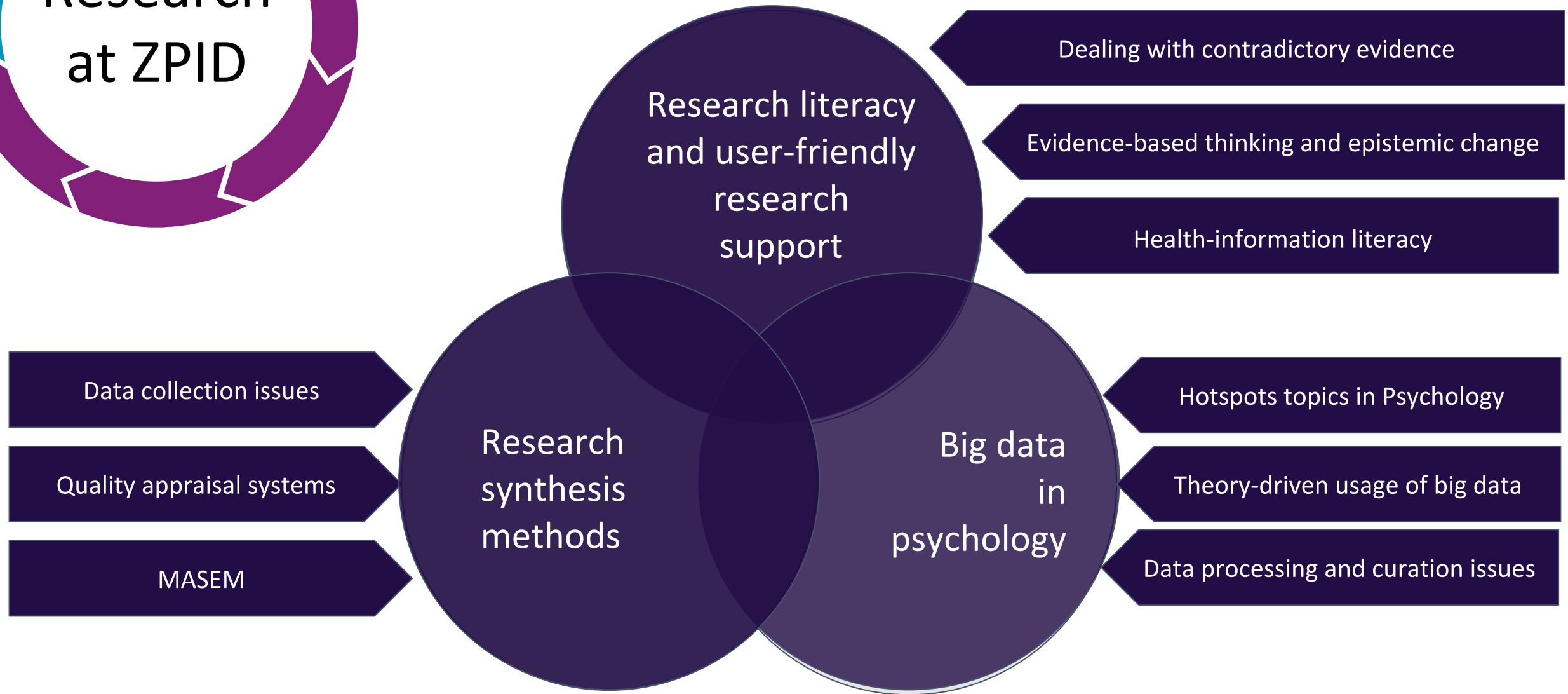
# PsychOpen CAMA: Usage Scenarios

- Continuously updated evidence on hotspot topics in Psychology and Consumer Behavior
- Planning and implementation tool for your own meta-analyses
- Tool to let the community update your meta-analysis
- Valuable source for teaching evidence-based tourism research issues / research methods classes



# Research at ZPID







Research Synthesis 2018 & 2019



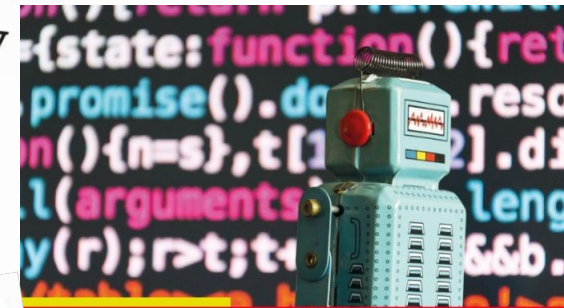
Michael Bošnjak  
Edgar Erdfelder  
(Editors)

## Hotspots in Psychology 2018

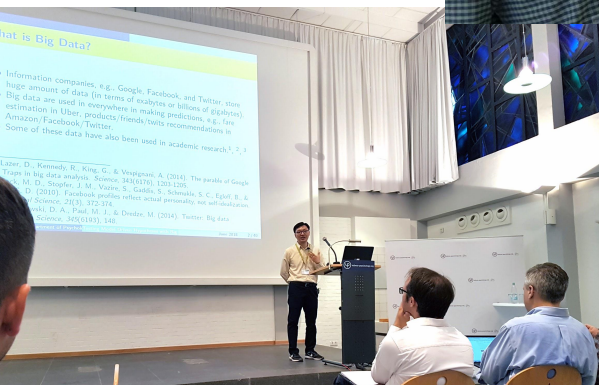
Zeitschrift für Psychologie  
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Volume 226 / Number 1 / 2018

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Christiane Spiel  
Elisabeth Stern



Open Science 2019



Big Data 2018 & 2019

Workshop with Ick Ajzen 2018



Michael Bošnjak  
Timo Gnamb  
(Editors)

## Hotspots in Psychology 2019

Mike W.-L. Cheung  
Suzanne Jak  
(Editors)

## Big Data in Psychology

Methods and Applications

Zeitschrift für Psychologie  
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Volume 226 / Number 4 / 2018

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Elisabeth Stern

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## ZPID Replicability Talk

M. Joseph Sirgy



Titel des Vortrags: Positive Balance: An integrative and replicable model of subjective well-being across hierarchical levels of analysis.

## Research Synthesis 2019 inkl. Big-Data-Symposium

Larry V. Hedges



Titel des Vortrags: Meta-analytic perspectives when studying replication

Wolfgang Viechtbauer



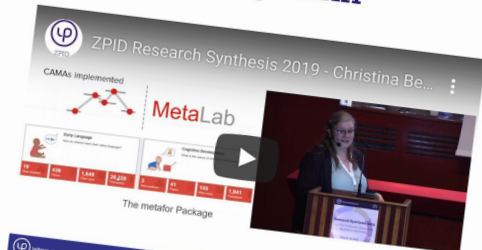
Titel des Vortrags: The R package metafor: Past, present and future

Terri Pigott



Titel des Vortrags: Considerations for power in meta-analysis

Christina Bergmann



Titel des Vortrags: Dynamically aggregating evidence in community-augmented meta-analyses

Isaac Hoy

<http://bit.ly/CBTS2019-ZPID>

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